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10/541,482

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James M. Connors

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EXAMINER

TRIEU, THAI BA

ART UNIT

PAPER NUMBER

3748

MAIL DATE

DELIVERY MODE

11/17/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,482

Applicant(s)

CONNERS, JAMES M.

Examiner

Thai-Ba Trieu

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 13-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 12, 2008 has been entered.

Applicant's cooperation in amending the claims to overcome the claim rejections relating to indefinite claim language is also appreciated.

Claims 1-8, 10 and 13 were amended;

Claims 9 and 11-12 were cancelled; and

Claims 14-19 were newly added.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 and its dependent claims 2-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically,

- In claim 1, line 7, the recitation of "first reservoir" renders the claim indefinite since it is not clear which reservoir is considered as a first one and which one is the

second one. Additionally, there is one reservoir to be introduced in claim 1. Therefore, there is no comparison to be made in order that the reservoir is to be known as the first one. Applicant is required to revise the claimed language.

- In claim 1, lines 12-13, the recitation of "can be driven" renders the claim indefinite, since it is not clear that under which condition of the engine the motor /air motor can be driven by the exhaust gas products, and under which condition of the engine the motor /air motor cannot be driven by the exhaust gas products? Applicant is required to identify the condition(s) or to revise the claimed limitations.

- In claim1, line 15, "**second exhaust products**" is a double recitation.

- In claim 15, line 2, the recitations of "can enter" and "cannot pass" render the claim indefinite, since it is not clear that under which condition of the engine the pressurized air from the first reservoir/second reservoir can enter/pass the second reservoir/first reservoir, and under which condition of the engine the pressurized air from the first reservoir/ second reservoir cannot enter/pass the second reservoir/ first reservoir? Applicant is required to identify the condition(s) or to revise the claimed limitations.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 10, and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Will Clarke England (Pub. Number DE 2550360 A).

Will Clarke England discloses an engine for use with a load, said engine comprising:

a compressor (4) that upon receiving power periodically defines a chamber (not Numbered), fills the chamber with ambient air (via 3); and carries out a pressurization process wherein the chamber volume is decreased to produce pressurized air (See Figure 30),

a first reservoir (6a) to receive pressurized from said compressor (4) (See Figure 30),

a combustor (5, 6) for receiving combusting fuel in a combustion process with the pressurized air from said compressor to produce primary exhaust products (See Figure 30),

a positive displacement air motor (7) coupled to said combustor, wherein said motor can be driven by the primary exhaust products from said combustor to produce power and secondary exhaust products (See Figure 30),

a positive displacement gas expander (7) for receiving the secondary exhaust products from said motor and expanding the secondary exhaust products to produce tertiary exhaust products and power (See Figure 30), and

a power transfer means (9) for directing power produced by said air motor (7) and said gas expander (7) in use to drive said compressor (4) and the load, (See Figure 30),

wherein:

when said the combustor (5, 6) receives varying amounts of fuel, said power transfer means (9) to drive the load with varying amounts of power in use; and during the pressurization process, said compressor (4) releases air from said chamber to said combustor wherein the pressure in said chamber during the pressurization process and the pressure of the primary exhaust products driving said air motor (7) are at a substantially constant level at steady state conditions, and adjust said level adjusting spontaneously to the load being driven;

wherein said compressor (4) is a rotary compressor (See Figures 3 and 30);

wherein the combustor comprising a tubular combustor (see Figure 30);

wherein said air motor (7) is a rotary air motor (See Figures 3 and 30);

wherein said gas expander (7) is a rotary gas expander (See Figures 3 and 30);

wherein said power transfer means (9) comprises a shaft operatively coupled to each of said compressor (4), said air motor (7) and said gas expander (7) (See Figure 30);

wherein said combustor (5, 6) receives air for combustion from said first reservoir (6a) (See Figure 30);

wherein said first reservoir is also serves as a radiator (See Figure 30);

wherein the expansion ratio defined by said expander (7) is larger than the compression ratio defined by said compressor (4) (See Figures 3 and 30);

wherein all pressurized air from said compressor (4) is directed to said first reservoir (6a) (See Figure 30);

a second reservoir (6a), wherein pressurized air from said first reservoir can enter said second reservoir (6a) when the pressure in said first reservoir (6a, between 4 and 7) is greater than the pressure in said second reservoir (6a, between 7 and 7) but air in said second reservoir cannot pass to said first reservoir (See Figure 30);

wherein substantially all pressurized air from said compressor (4) must pass through said first reservoir (6a) and said combustor in order to be exhausted from said engine (via 8) (See Figure 30);

wherein all pressurized air from said first reservoir (6a) is provided to said combustor (5, 6) or stored in said second reservoir (6a, between 7 and 7), wherein all pressurized air from said first reservoir (6a, between 4 and 7) and

said second reservoir must pass through said combustor (5, 6) in order to be exhausted from said engine (via 8) (See Figure 30).

Claims 1-5, 7-8 and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Lysholm (Patent Number 3,405,604).

Lysholm discloses an engine for use with a load, said engine comprising:

a compressor (10) that upon receiving power periodically defines a chamber (not Numbered), fills the chamber with ambient air (via arrow to 10); and carries out a pressurization process wherein the chamber volume is decreased to produce pressurized air (See Figure 1),

a first reservoir (14) to receive pressurized from said compressor (10) (See Figure 1),

a combustor (16) for receiving combusting fuel in a combustion process with the pressurized air from said compressor to produce primary exhaust products (See Figure 1),

a positive displacement air motor (13) coupled to said combustor (16), wherein said motor (13) can be driven by the primary exhaust products from said combustor (16) to produce power and secondary exhaust products (See Figure 1),

a positive displacement gas expander (11) for receiving the secondary exhaust products from said motor and expanding the secondary exhaust products to produce tertiary exhaust products and power (See Figure 1), and

a power transfer means (21, shaft between 10 and 11, exhaust gas) for directing power produced by said air motor (13) and said gas expander (11) in use to drive said compressor (10) and the load (via 20), (See Figure 1),

wherein:

when said the combustor (16) receives varying amounts of fuel, said power transfer means (21, shaft between 10 and 11, exhaust gas) to drive the load (via 20) with varying amounts of power in use; and during the pressurization process, said compressor (10) releases air from said chamber to said combustor wherein the pressure in said chamber during the pressurization process and the pressure of the primary exhaust products driving said air motor (13) are at a substantially constant level at steady state conditions, and adjust said level adjusting spontaneously to the load being driven;

wherein said compressor (10) is a rotary compressor (See Figure 1);

wherein the combustor (16) comprising a tubular combustor (See Figure 1);

wherein said air motor (13) is a rotary air motor (See Figure 1);

wherein said gas expander (11) is a rotary gas expander (See Figure 1);

wherein said combustor (16) receives air for combustion from said first reservoir (14) (See Figure 1);

wherein said first reservoir is also serves as a radiator (See Figure 1);

wherein all pressurized air from said compressor (10) is directed to said first reservoir (14) (See Figure 1);

a second reservoir (14), wherein pressurized air from said first reservoir can enter said second reservoir (14) when the pressure in said first reservoir (14) is greater than the pressure in said second reservoir (15) but air in said second reservoir cannot pass to said first reservoir (See Figure 1); and

wherein substantially all pressurized air from said compressor (10) must pass through said first reservoir (14) and said combustor (16) in order to be exhausted from said engine (See Figure 1, Column 4, lines 14-75, Columns 5-7, lines 1-75, and Column 8, lines 1-19)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Will Clarke England (Pub. Number DE 2550360 A) or Lysholm (Patent Number 3,405,604), in view of Holtzapfel et al. (Pub. Number US 2002/0014069 A1).

Will Clarke England/Lysholm discloses the invention as recited above; however, Will Clarke England/Lysholm fails to disclose the combustor comprising a tubular combustor.

Holtzaple teaches that it is conventional in the engine art, to utilize the combustor means (900) comprises a tubular combustor (See Figures 9).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the tubular combustor, as taught by Holtzaple, to provide an alternative design of the shape of the combustor for the Will Clarke England/Lysholm device.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Will Clarke England (Pub. Number DE 2550360 A) or Lysholm (Patent Number 3,405,604), in view of Leidel (Patent Number 6,092,365).

Will Clarke England/Lysholm discloses the invention as recited above; however, Will Clarke England/Lysholm fails to disclose the expansion ratio defined by said expander being larger than the compression ratio defined by said compressor.

Leidel teaches that it is conventional in the art of heat engines, to utilize the expansion ratio defined by said expander (66) being larger than the compression ratio defined by said compressor (18) (See Figure 1, Column 9, lines 4-26).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the expansion ratio defined by said expander being

larger than the compression ratio defined by said compressor, as taught by Leidel, to improve the efficiency of the Will Clarke England/Lysholm device, since the use thereof would have reduced heat loss during expansion process/cycle.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Will Clarke England (Pub. Number DE 2550360 A) or Lysholm (Patent Number 3,405,604), in view of Sauder (patent Number 3,724,427).

The modified Will Clarke England/Lysholm discloses the invention as recited above; however, fails to disclose a three stage compressor.

Sauder teaches that it is conventional in the art of rotary internal combustion engines, to utilize the compressor being a three stage-compressor (204, 206, 208) (See Figures 9-10).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized a three stage compressor, as taught by Sauder, to improve the efficiency for the modified Will Clarke England/Lysholm device.

Allowable Subject Matter

Claims 18-19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 1-8, 10, and 13-19 have been considered but are moot in view of the new ground(s) of rejection.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TTB
November 07, 2008

/Thai-Ba Trieu/
Primary Examiner
Art Unit 3748